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APPLICATION FOR UNITED STATES LETTERS PATENT

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TITLE: TV Signal Receiving Tuner Capable
of Outputting Oscillation Signal
Having Wide Frequency Band by
Means of Single Local Oscillator

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TV SIGNAL RECEIVING TUNER CAPABLE OF OUTPUTTING
OSCILLATION SIGNAL HAVING WIDE FREQUENCY BAND BY MEANS
OF SINGLE LOCAL OSCILLATOR

BACKGROUND OF THE INVENTION

1. Field of the Invention

The present invention relates to a TV signal receiving tuner and, more specifically, to a TV signal receiving tuner which can be reduced in size and cost.

2. Description of the Related Art

TV signals are divided into UHF (806 to 470 MHz in the U.S.), VHF high-band (216 to 174 MHz in the U.S.) and VHF low-band (88 to 54 MHz in the U.S.) signals when they are received.

As shown in Fig. 3, a tuner comprises an input terminal 32 connected to an antenna 31, a UHF mono-tuning circuit 33, a UHF high-frequency amplifier 34, a UHF multi-tuning circuit 35, a UHF mixer 36, a UHF local oscillator 37, a UHF resonance circuit 38, a VHF high-band mono-tuning circuit 39, a VHF high-band high-frequency amplifier 40, a VHF high-band multi-tuning circuit 41, a VHF high-band mixer 42, a VHF high-band local oscillator 43, a VHF high-band resonance circuit 44, a VHF low-band mono-tuning circuit 45, a VHF low-band high-frequency amplifier 46, a VHF low-band multi-tuning circuit 47, a VHF low-band mixer 48, a VHF low-band local oscillator 49, a VHF low-band resonance circuit 50, a filter 51, an

intermediate-frequency amplifier 52, a PLL IC 53, a quartz oscillator 54, a local oscillator switch 55 and a tuner output terminal 56.

To receive a UHF TV signal, a TV signal received by the antenna 31 is tuned by the UHF mono-tuning circuit 33, amplified by the UHF high-frequency amplifier 34, and tuned by the UHF multi-tuning circuit 35. The tuning frequencies of the UHF mono-tuning circuit 33 and the UHF multi-tuning circuit 35 are changed by a tuning voltage V_t output from the PLL IC 53 and tuned at the frequency band of a channel to be received. Since the output impedance of the antenna 31 is low and the input impedances of the UHF high-frequency amplifier 34 and the UHF multi-tuning circuit 35 are high, impedance matching is carried out by the UHF mono-tuning circuit 33.

The TV signal output from the UHF multi-tuning circuit 35 is applied to the UHF mixer 36. One input terminal of the UHF mixer 36 is connected to the output terminal of the UHF multi-tuning circuit 35 and the other input terminal is connected to the UHF local oscillator 37. The UHF local oscillator 37 is connected to the UHF resonance circuit 38 so that a local oscillation signal output from the UHF local oscillator 37 is changed by the tuning voltage V_t input from the PLL IC 53 into the UHF resonance circuit 38. Since the UHF local oscillator 37 outputs a local oscillation signal which is 44 MHz higher than a TV signal to be received, a converted signal having